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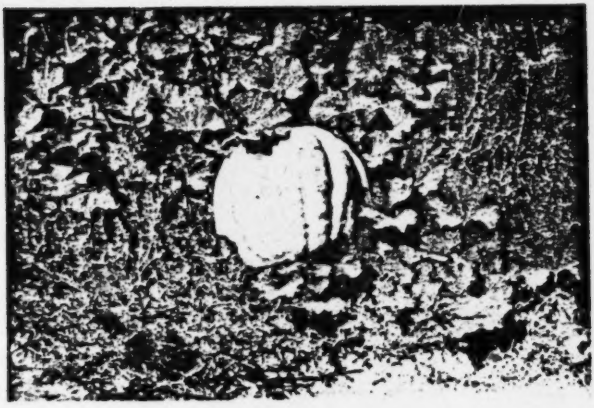

Fig. 141. The large gourd known as *kabaya* (*Cucurbita maxima*) growing close to the thorny fence (*aferaj*) which term is also generally used to designate a garden. Ahaggar, *Akl Azzi* Arabs.

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Tuareg garden owners have other obligations besides those listed under these three items, but these obligations vary with the systems of contract of which there are three. One system is known as *khamast* according to which the agriculturists gets only one fifth of the crops. This system is widely found in North Africa but has disappeared in Ahaggar some years ago. It is said that it was abolished by the *Amenukal* because it very frequently gave rise to disputes between Tuareg garden owners and their cultivators. It is now replaced by two other systems, the *tilt* system allowing one third of the crops to the cultivator, and the *aṛil* system according to which crops are divided equally between the owner and the cultivator. This last system is that almost exclusively used in Ahaggar nowadays.

To revert to Tuareg obligations towards their cultivators, these obligations, in addition to those mentioned above, are as follows:—

(4) To hand over an amount of seed-corn (*téfest*) of wheat and barley according to the size of the garden plot and the system of contract. With a *khamast* agreement the Tuareg garden owner gives all seed-corn. With a *tilt* agreement half of the seed-corn is supplied by the owner, the other half by the cultivator who is then also allowed to cultivate a private garden. With an *aṛil* agreement half of the seed-corn is given by the garden owner, the other half by the cultivator who does not possess a private garden unless he is headman of a *foggara* (p. 196).

(5) To give an amount of food to the agriculturist during the cultivation period of six months. This payment is known as *tenafok*, and is fixed at 75 kilos of millet, barley, or dates when cultivation is done according to the *aṛil* system, while 150 kilos are given for cultivation according to agreements of the two systems *tilt* and *khamast*.

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The net profit to an agriculturist who cultivates for a Tuareg garden owner is lower than that gained by an agriculturist cultivating exclusively for his own private use. This will be seen more clearly from the calculations below where a garden with an annual yield of 700 kilos wheat and barley is considered:—

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	Cultivator		*Tuareg Garden Owner*	
The khamast system	Receipts	Expenditure	Receipts	Expenditure
The *khamast* division	140 kg		560 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn				50 kg
Food given to the cultivator	150 kg			150 kg
	290 kg	10 kg	560 kg.	210 kg
Net profit	280 kg		350 kg	
The tilt system				
The tilt division	233 kg		466 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn		25 kg		25 kg
Food given to the cultivator	150 kg			150 kg
	383 kg	35 kg	466 kg	185 kg
Net profit	348 kg		281 kg	
The aṛil system				
The *aṛil* division	350 kg		350 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn		25 kg		25 kg
Food given to the cultivator	75 kg			75 kg
	425 kg	35 kg	350 kg	110 kg
Net profit	390 kg		240 kg	

A few notes should be added to these calculations of receipts and expenditure in the three systems. Thus the profit of the cultivator in all three systems is somewhat bigger than is indicated. The hoe is given by the Tuareg garden owner, who must also make certain payments for irrigation work and for the making of new garden beds as mentioned above. The garden owner's net profit in kilogrammes is consequently somewhat lower than indicated, but it should be mentioned that payments made by a Tuareg garden owner are hardly ever made in wheat and barley, but mainly in millet and dates which are less valuable, particularly so because the pastoral Tuareg acquire millet and dates at very low prices during their caravan expeditions (cf. p. 209 ff.). Therefore, the profit made by a Tuareg garden owner cannot so easily be given in kilogrammes of agricultural food products. It is evident that all three systems are profitable to the Tuareg, and it is clear that an agriculturist who cultivates a garden entirely on his own behalf is better off than an agriculturist who works for the Tuareg. It is also evident that to the agriculturist the *khamast* system is less profitable than the *tilt* system, which again is less profitable than the *aṛil* system. With the abolishment of the *khamast* system the agriculturists now

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obtain a larger amount of vegetable food products and more wheat and barley. The pastoral Tuareg gain less from their gardens than they did when the *khamast* system prevailed, but it is still profitable for them to be garden owners.

The quantity of agricultural products anually consumed per person among the *Kel Ahaggar* is estimated by Lhote at 187 kilos millet, 15 kilos dates, and a small amount of wheat for which no figure is given. For Arabs of the Sahara the quantity of vegetable food is estimated at 180 kilos wheat, and 75 kilos dates anually per person (Lhote 1955a, p. 263). I add to this that wheat is used for bread to a very large extent by the Ahaggar Tuareg, who also make much use of barley for bread and porridge. According to Malaurie the amount of agricultural food products available per person among the Ahaggar Tuareg is about 400 grammes a day, or 146 kilos anually (Malaurie 1953, p. 342). It should be noted again that the amount of agricultural food products necessary for a Tuareg household varies greatly from one year to the other. In years of drought when agricultural products form so to speak the only source of food for the nomads, they estimate that a household consisting of husband, wife, and one child will consume about two kilos of cereals (dates) every day, or 730 kilos in a year. Consequently the amount of cereals and dates consumed anually per person may in dry years rise to about 245 kilos. This seems to correspond to the amount of food considered necessary for Arabs of Tidikelt and Tawat, who live almost exclusively on cereals and dates. When employed as labourers by the French Administration these sedentary Arabs are given 16 kilos of wheat and 4 kilos of rice a month, or 240 kilos of agricultural products anually per person (Information obtained from the administration office of In Salah in 1954). The agricultural products obtained by a pastoral household from a single garden will not meet the needs of the household and its slaves even in years of good grazing, and less so in dry years when pastoralists subsist entirely on agricultural food products. I give an example: During the year 1954 55 which was extremely dry, a Tuareg who owned three gardens cultivated with an *aril* agreement could not feed his household and his slaves (comprising two men, two women, and three children from five to twelve years old) by means of his own garden products. The Ahaggar Tuareg depend on caravan trading for their provisions of agricultural food, and trading also helps them to create the capital of millet and dates which is invested in their gardens in Ahaggar grown on their behalf by agriculturists. I believe that most pastoral households of Ahaggar have gardens, but there are Tuareg who have none. This is true, for instance, of most Tuareg living in and around the Ahnet Massif. Tuareg of this region formerly had gardens irrigated by the *foggara* system at Abalessa, but to-day they acquire their vegetable food products mainly by caravan trading.

IRRIGATION AGRICULTURE IN AYR

The largest aggregation of sedentary people in Ayr is found in Agadez (4.737), which is inhabited almost exclusively by negroid peoples who speak Hausa though most of them also know the Tuareg language (*tamachek*). This large sedentary population mainly lives on trade and on crafts of various kinds. The inhabitants are known to the Tuareg as the *Imeggedezen*. They are said to be related to the Sultan (or the *Amenukal*) of Agadez. There is a tradition which claims that the Sultan came